UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,970	09/30/2003	Rakesh Agrawal	ARC920030033US1	5962

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EXAMINER
SOMMERFELD, PAUL J

ART UNIT	PAPER NUMBER
2168	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/676,970	AGRAWAL ET AL.
	Examiner	Art Unit
	Paul J. Sommerfeld	2168

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All b)☐ Some * c)☐ None of:

　　　　1.☐ Certified copies of the priority documents have been received.

　　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date *4/27/2005*.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 1 recites the steps of identifying links between authors and analyzing those links. These steps do not produce a useful, tangible result, as there is no indication in the claim as to how these abstract steps are tied to a useful, tangible result. Additionally, there is no indication of the final result of the steps of identifying links and analyzing the identified links. Because the method recited in claim 1 fails to produce a tangible result, it therefore fails to produce a useful result.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1, 2, 7, 12, 13, 17 and 20 are rejected under 35 U.S.C. 102(b) as being

anticipated by <u>Chang et al</u> (Chang, Chin-Lung; Chen, Ding-Yi; Chuang, Tyng-Ruey;

"Browsing Newsgroups with A Social Network Analyzer", Proceedings of the Sixth

International Conference on Information Visualization, 2002, 6 pages).

As to claim 1, <u>Chang et al</u> teaches a method of partitioning authors on a given

topic in a newsgroup into two opposite classes of the authors, the method comprising:

identifying all links among the authors, wherein each link represents a response

from one of the authors to another of the authors (p. 3 col. 1 lines 34-36, a link exists

from author v_i to author v_j if v_i ever replies to an article posted by v_j); and

analyzing the identified links, wherein the identified links are assumed to be more

likely to be antagonistic links rather than non-antagonistic links (p. 3 col. 2 lines 5-12,

analyzing identified links by computing a transitional probability matrix, and using that

matrix to calculate each author's prestige. It may be assumed that the links are likely to

be antagonistic, since the links pertain to dialogues within a newsgroup (p. 2 col. 1 lines

31-36)).

As to claims 2 and 13, <u>Chang et al</u> teaches the method of claim 1 wherein the

identifying comprises:

assigning a vertex of a graph to each of the authors (p. 3 col. 1 line 30, nodes of

a graph are authors); and

assigning an edge of the graph to each interaction between two of the assigned

vertices corresponding to two of the authors (p. 3 col. 1 lines 34-36, a link exists from

author v_i to author v_j if v_i ever replies to an article posted by v_j).

As to claims 7 and 17, Chang et al teaches fixing the assigned vertices of the

authors who are most prolific (p. 3 col. 1 lines 8-15).

As to claim 12, Chang et al teaches a system of partitioning authors on a given

topic in a newsgroup into two opposite classes of the authors (p. 6 col. 1 lines 2-3,

system).

For the remaining limitations of the claim, the Applicant is referred to the remarks

and discussions made regarding claim 1 above.

As to claim 20, Chang et al teaches a computer program product usable with a

programmable computer having readable program code embodied therein partitioning

authors on a given topic in a newsgroup into two opposite classes of the authors (p. 6

col. 1 lines 2-3, Java application).

For the remaining limitations of the claim, the Applicant is referred to the remarks

and discussions made regarding claim 1 above.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 3, 8, 14, and 18 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chang et al (Chang, Chin-Lung; Chen, Ding-Yi; Chuang, Tyng-Ruey;

"Browsing Newsgroups with A Social Network Analyzer", Proceedings of the Sixth

International Conference on Information Visualization, 2002, 6 pages), and further in

view of Kernighan et al (Kernighan, B. W.; Lin, S.; "An Efficient Heuristic Procedure for

Partitioning Graphs", The Bell System Technical Journal, 1970, pp. 291-307, included in

the Information Disclosure Statement filed with the instant application).

        As to claims 3 and 14, Chang et al teaches the analyzing comprises:

        creating a co-citation matrix of the graph, wherein the co-citation matrix

comprises the assigned vertices and the assigned edges (p. 2 col. 2 lines 41-45, a

matrix comprising assigned vertices and edges);

        setting a weighted edge with a weight of w for each set of two of the assigned

vertices only if the number of the authors to whom both members of the set have

responded is w (p. 3 col. 2 lines 6-8, setting an edge with weight w_i, where w_i is the

number of edges (i.e. responses) between two vertices (i.e. authors)).

        Chang et al does not explicitly teach solving a min-weight approximately

balanced cut problem on the co-citation matrix, thereby generating the two opposite

classes of the authors.

Kernighan et al teaches solving a min-weight approximately balanced cut

problem on the co-citation matrix, thereby generating the two opposite classes of the

authors (p. 295 lines 14-26).

Therefore, it would have been obvious to one skilled in the art at the time the

invention was made to have modified the method of identifying and analyzing links

between authors in a newsgroup taught by Chang et al by the method of solving a min-

weight approximately balanced cut problem on a matrix taught by Kernighan et al,

because solving a min-weight problem on a matrix partitions the set corresponding to

the matrix into two sets, such that the external cost is minimized (Kernighan et al p. 295

lines 14-19).

As to claims 8 and 18, Chang et al teaches the analyzing comprises:

creating a co-citation matrix of the graph, wherein the co-citation matrix

comprises the assigned vertices, the assigned edges, and the fixed assigned vertices of

the most prolific authors (p. 2 col. 2 lines 41-45, a matrix comprising assigned vertices

and edges);

setting a weighted edge with a weight of w for each set of two of the assigned

vertices only if the number of the authors to whom both members of the set have

responded is w (p. 3 col. 2 lines 6-8, setting an edge with weight w_i, where w_i is the

number of edges (i.e. responses) between two vertices (i.e. authors)).

Chang et al does not explicitly teach solving a min-weight approximately balanced cut problem on the co-citation matrix, thereby generating the two opposite classes of the authors.

Kernighan et al teaches solving a min-weight approximately balanced cut problem on the co-citation matrix, thereby generating the two opposite classes of the authors (p. 295 lines 14-26).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of identifying and analyzing links between authors in a newsgroup taught by Chang et al by the method of solving a min-weight approximately balanced cut problem on a matrix taught by Kernighan et al, because solving a min-weight problem on a matrix partitions the set corresponding to the matrix into two sets, such that the external cost is minimized (Kernighan et al p. 295 lines 14-19).

6.   Claims 4, 9, 15, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (Chang, Chin-Lung; Chen, Ding-Yi; Chuang, Tyng-Ruey; "Browsing Newsgroups with A Social Network Analyzer", Proceedings of the Sixth International Conference on Information Visualization, 2002, 6 pages), and further in view of Goemans et al (Goemans, Michel X.; Williamson, David P.; ".878-Approximation Algorithms for MAX CUT and MAX 2SAT", In Proceedings Of the 26th Theory of Computing, pp. 422-431, Montreal, Quebec, Canada, 23-25 May 1994, included in the Information Disclosure Statement filed with the instant application).

As to claims 4 and 15, <u>Chang et al</u> does not explicitly teach the analyzing comprises solving a max cut problem on the graph, wherein the graph comprises the assigned vertices and the assigned edges, thereby generating the two opposite classes of the authors.

<u>Goemans et al</u> teaches the analyzing comprises solving a max cut problem on the graph, wherein the graph comprises the assigned vertices and the assigned edges, thereby generating the two opposite classes of the authors (p. 422 col. 2 lines 2-7, S and ~S are the two opposite classes generated by solving the max cut problem).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of identifying and analyzing links between authors in a newsgroup taught by <u>Chang et al</u> by the method of solving a max cut problem taught by <u>Goemans et al</u>, because solving a max cut problem on a graph separates the vertices of the graph into two opposite classes, while maximizing the sum of the weights of edges crossing between the two classes (<u>Goemans et al</u> p. 422 col. 2 lines 2-7).

As to claims 9 and 19, <u>Chang et al</u> does not explicitly teach the analyzing comprises solving a max cut problem on the graph, wherein the graph comprises the assigned vertices, the assigned edges, and the fixed assigned vertices of the most prolific authors, thereby generating the two opposite classes of the authors.

<u>Goemans et al</u> teaches the analyzing comprises solving a max cut problem on

the graph, wherein the graph comprises the assigned vertices, the assigned edges, and the fixed assigned vertices of the most prolific authors, thereby generating the two opposite classes of the authors (p. 422 col. 2 lines 2-7, S and ~S are the two opposite classes generated by solving the max cut problem).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of identifying and analyzing links between authors in a newsgroup taught by Chang et al by the method of solving a max cut problem taught by Goemans et al, because solving a max cut problem on a graph separates the vertices of the graph into two opposite classes, while maximizing the sum of the weights of edges crossing between the two classes (Goemans et al p. 422 col. 2 lines 2-7).

7.   Claims 5, 6, 10, 11, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (Chang, Chin-Lung; Chen, Ding-Yi; Chuang, Tyng-Ruey; "Browsing Newsgroups with A Social Network Analyzer", Proceedings of the Sixth International Conference on Information Visualization, 2002, 6 pages) in view of Kernighan et al (Kernighan, B. W.; Lin, S.; "An Efficient Heuristic Procedure for Partitioning Graphs", The Bell System Technical Journal, 1970, pp. 291-307, included in the Information Disclosure Statement filed with the instant application), and still further in view of Spielman et al (Spielman, Daniel A.; Teng, Shang-Hua; "Spectral Partitioning Works: Planar graphs and finite element meshes", In 37th Annual Symposium on

Foundations of Computer Science, 1996, included in the Information Disclosure

Statement filed with the instant application).

As to claims 5 and 16, Chang et al, as modified by Kernighan et al, still does not

teach calculating the second eigenvector of the co-citation matrix, thereby generating

the two opposite classes of the authors.

Spielman et al teaches calculating the second eigenvector of the co-citation

matrix, thereby generating the two opposite classes of the authors (p. 2 col. 1 lines 6-

10).

Therefore, it would have been obvious to one skilled in the art at the time the

invention was made to have modified the method of identifying and analyzing links

between authors in a newsgroup taught by Chang et al, as modified by Kernighan et al,

by the step of calculating the second eigenvector of the co-citation matrix taught by

Spielman et al, because partitioning by calculating the second eigenvector of the co-

citation matrix is a successful heuristic for partitioning graphs and matrices (Spielman et

al p. 1 col. 1 lines 2-3).

As to claim 6, Chang et al, as modified by Kernighan et al and Spielman et al,

teaches applying a Kernighan-Lin heuristic on the second eigenvector of the co-citation

matrix (Kernighan et al p. 295 lines 20-26, describing the applying the Kernighan-Lin

heuristic).

As to claim 10, <u>Chang et al</u>, as modified by <u>Kernighan et al</u>, still does not teach calculating the second eigenvector of the co-citation matrix, thereby generating the two opposite classes of the authors.

<u>Spielman et al</u> teaches calculating the second eigenvector of the co-citation matrix, thereby generating the two opposite classes of the authors (p. 2 col. 1 lines 6-10).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of identifying and analyzing links between authors in a newsgroup taught by <u>Chang et al</u>, as modified by <u>Kernighan et al</u>, by the step of calculating the second eigenvector of the co-citation matrix taught by <u>Spielman et al</u>, because partitioning by calculating the second eigenvector of the co-citation matrix is a successful heuristic for partitioning graphs and matrices (<u>Spielman et al</u> p. 1 col. 1 lines 2-3).

As to claim 11, <u>Chang et al</u>, as modified by <u>Kernighan et al</u> and <u>Spielman et al</u>, teaches applying a Kernighan-Lin heuristic on the second eigenvector of the co-citation matrix (<u>Kernighan et al</u> p. 295 lines 20-26, describing the applying the Kernighan-Lin heuristic).

Conclusion

8.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Kumar, Ravi; Raghavan, Prabhakar; Rajagopalan, Sridhar; Tomkins, Andrew; "Trawling the web for emerging cyber-communities", In Proceedings of 8th WWW Conference, 1999, for teaching a method of identifying communities within newsgroups.

- U.S. Publication 2004/0122803 A1, issued to Dom et al, for teaching a method of identifying relationships between users of a computerized network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul J. Sommerfeld whose telephone number is 571 272-6545. The examiner can normally be reached on M-F 7:45 am - 4:15pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim T. Vo can be reached on 571 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TIM VO
PRIMARY EXAMINER